



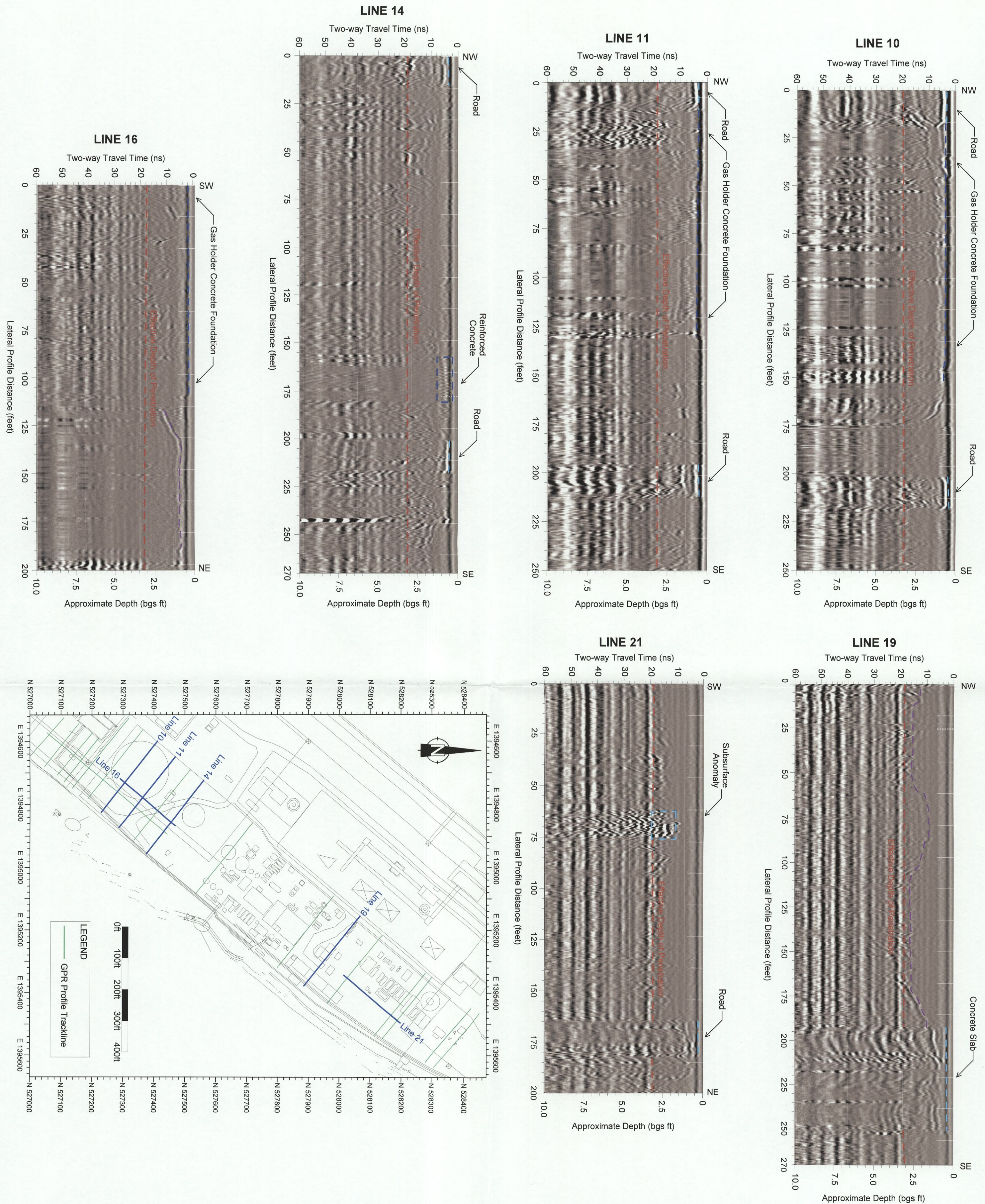
**DRAFT FINAL
REMEDIAL INVESTIGATION REPORT
FOR THE
FORMER ARMCO HAMILTON PLANT SITE
401 Augspurger Road, New Miami, Ohio**

**FIGURES
Figures 4.0.2-8 – 4.16.1-4**

Volume 6 of 10



November 2008



NOTES:

Ground penetrating radar profiles were collected using a GSSI SIR-2000 utilizing a 400 MHz antenna.

Record lengths was approximately 60 ns.

GPR records were processed using RADAN and RAD2BMP software packages developed by GSSI.

GPR Profile Locations and Example Output
AOC-13 South Parcel
AK Steel Corporation
Former Armco Hamilton Plant
401 Augspurger Road
New Miami, Butler County, OH
August 2005

SCALE:
AS SHOWN

DATE:
06/22/06

PROJECT NUMBER:
00076-069-300

ENSR AECOM

ENSR CORPORATION
27755 DIEHL RD. SUITE 100
WARRENVILLE, ILLINOIS 60555
PHONE: (630) 836-1700
FAX: (630) 836-1711
WEB: HTTP://WWW.ENSR.AECOM.COM

FIGURE 4.10.2-2

DRAWING NUMBER:

SHEET NUMBER

1

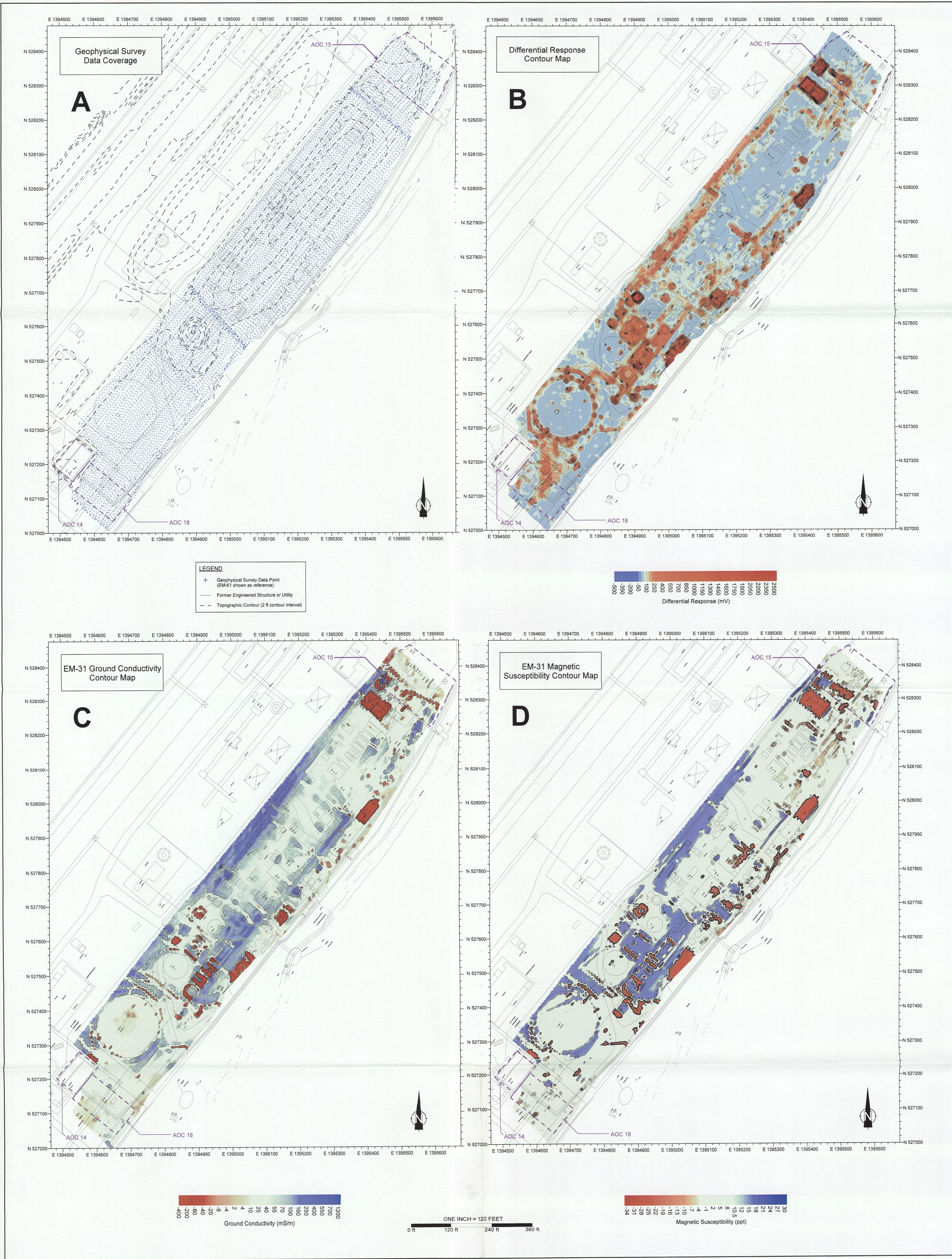


FIGURE 4.10.2-1

Geophysical Survey Contour Maps AOC-13 Former By Products Area AK Steel Corporation Former Armco Hamilton Plant 401 Augspurger Road New Miami, Butler County, OH August 2005		
SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	06/22/06	00076-069-300

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NOTES:

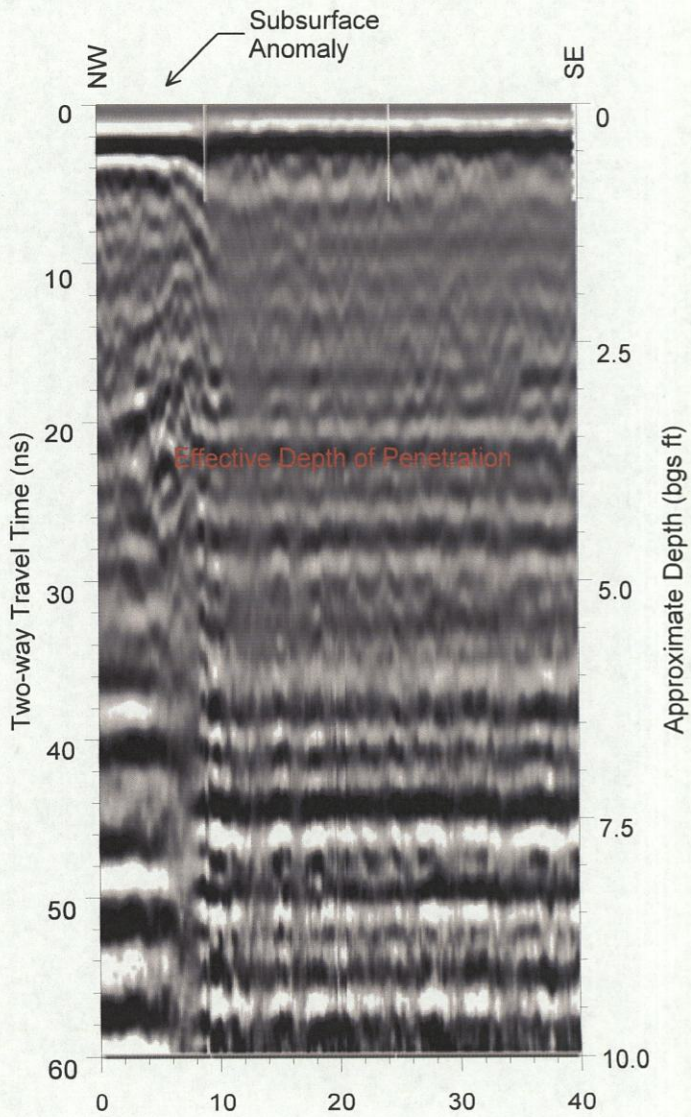
Ground conductivity and magnetic susceptibility data were collected using a Geonics, Ltd. EM-31 Terrain Conductivity meter. Instrument was used in vertical dipole mode.

Differential response electromagnetic data were collected using a Geonics, Ltd. EM-61 high sensitivity metal detector with 1.0 x 0.5 meter coils.

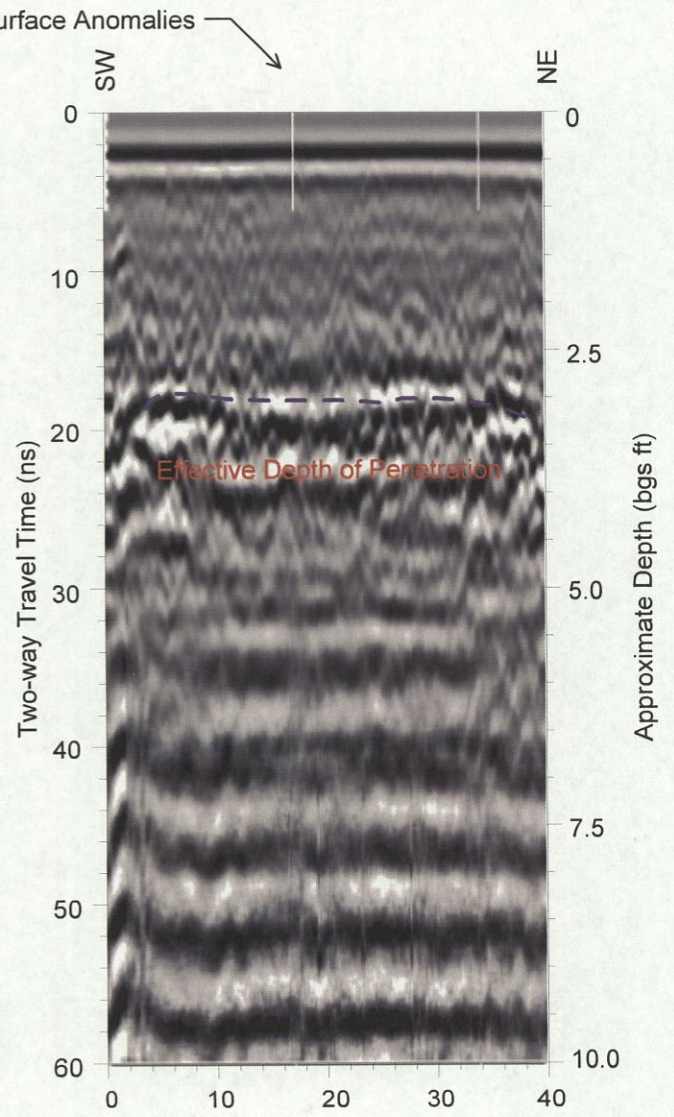
Position control was maintained using a Trimble GeoXT Differential GPS (DGPS) in Ohio South State Plane coordinate system, NAD83 Geodetic Datum.

Data collection profile spacing was approximately 5 feet with station spacing at approximately 2.5 feet.

LINE 7



LINE 16



LEGEND

— GPR Profile Trackline

DRAWING NUMBER:	FIGURE 4.8.2-2
SHEET NUMBER:	1

GPR Profile Locations and Example Output AOC 11 - South Parcel AK Steel Corporation Former Armco Hamilton Plant 401 Augspurger Road New Miami, Butler County, OH August 2005		
SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	6/22/06	00076-069-300

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NOTES:
Ground Penetrating Radar profiles were collected using a GSSI SIR-2000 utilizing a 400 MHz antenna.
Record length was approximately 60 ns.
GPR records were processed using RADAN and RAD2BMP software packages developed by GSSI.

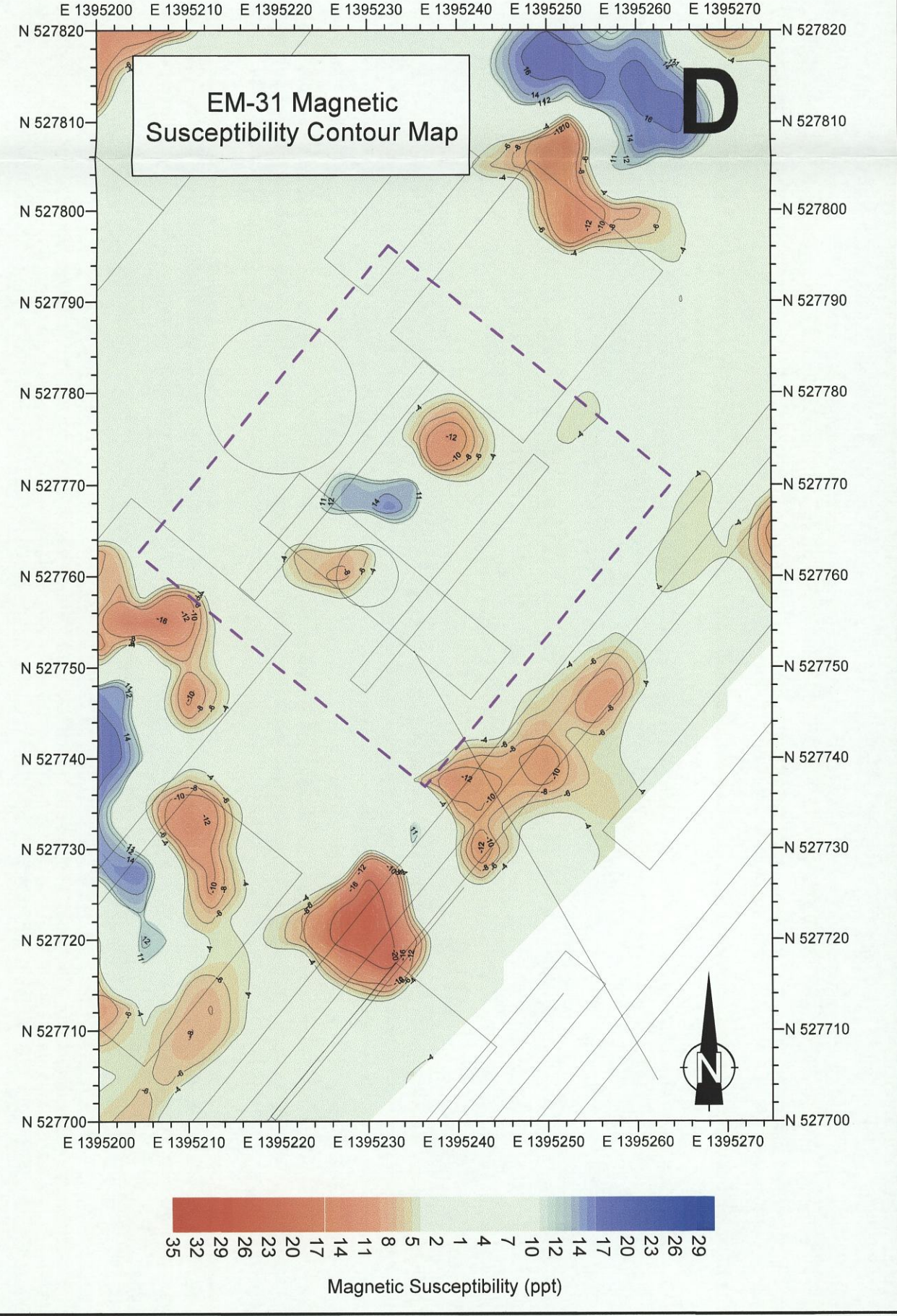
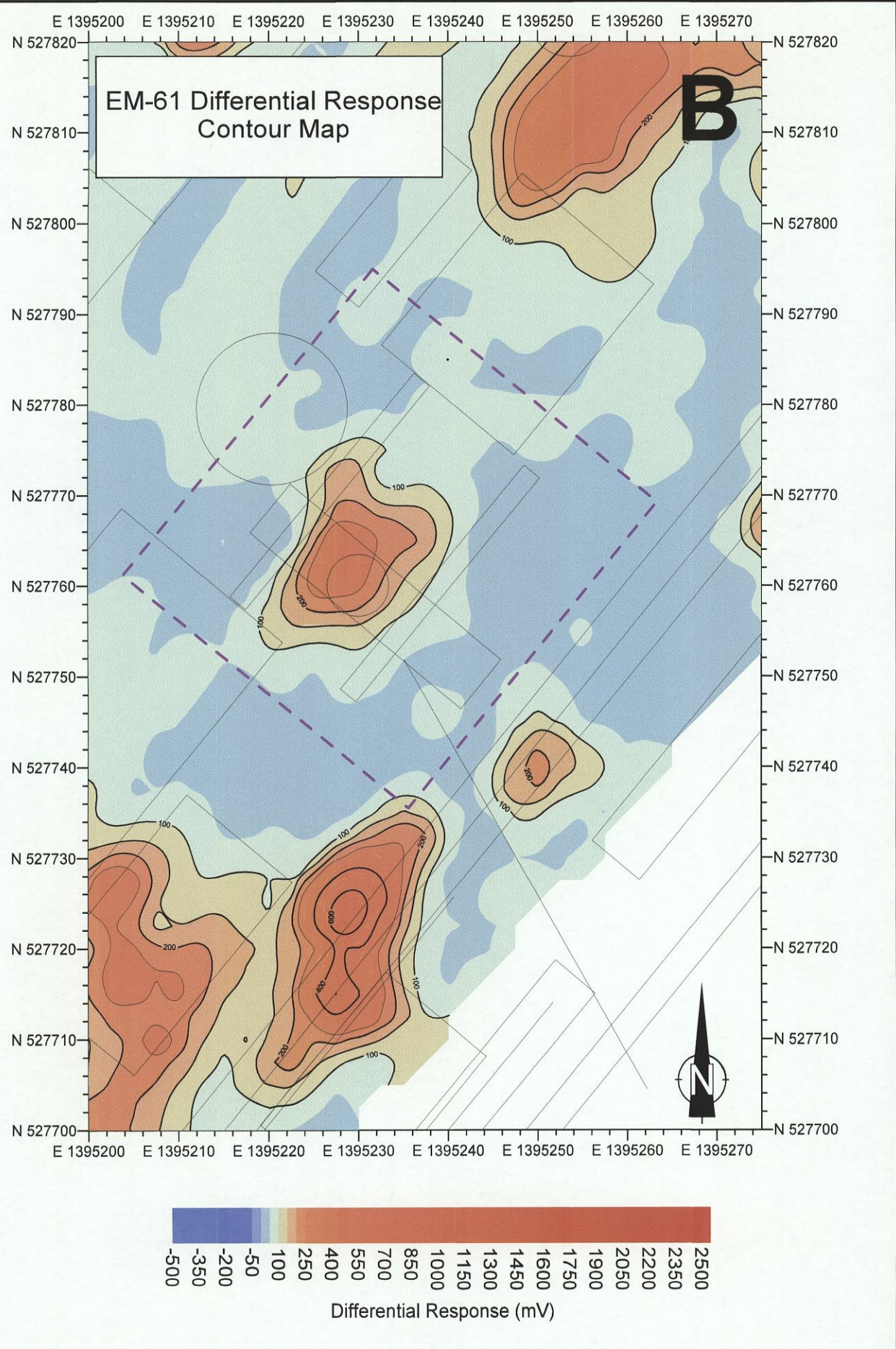
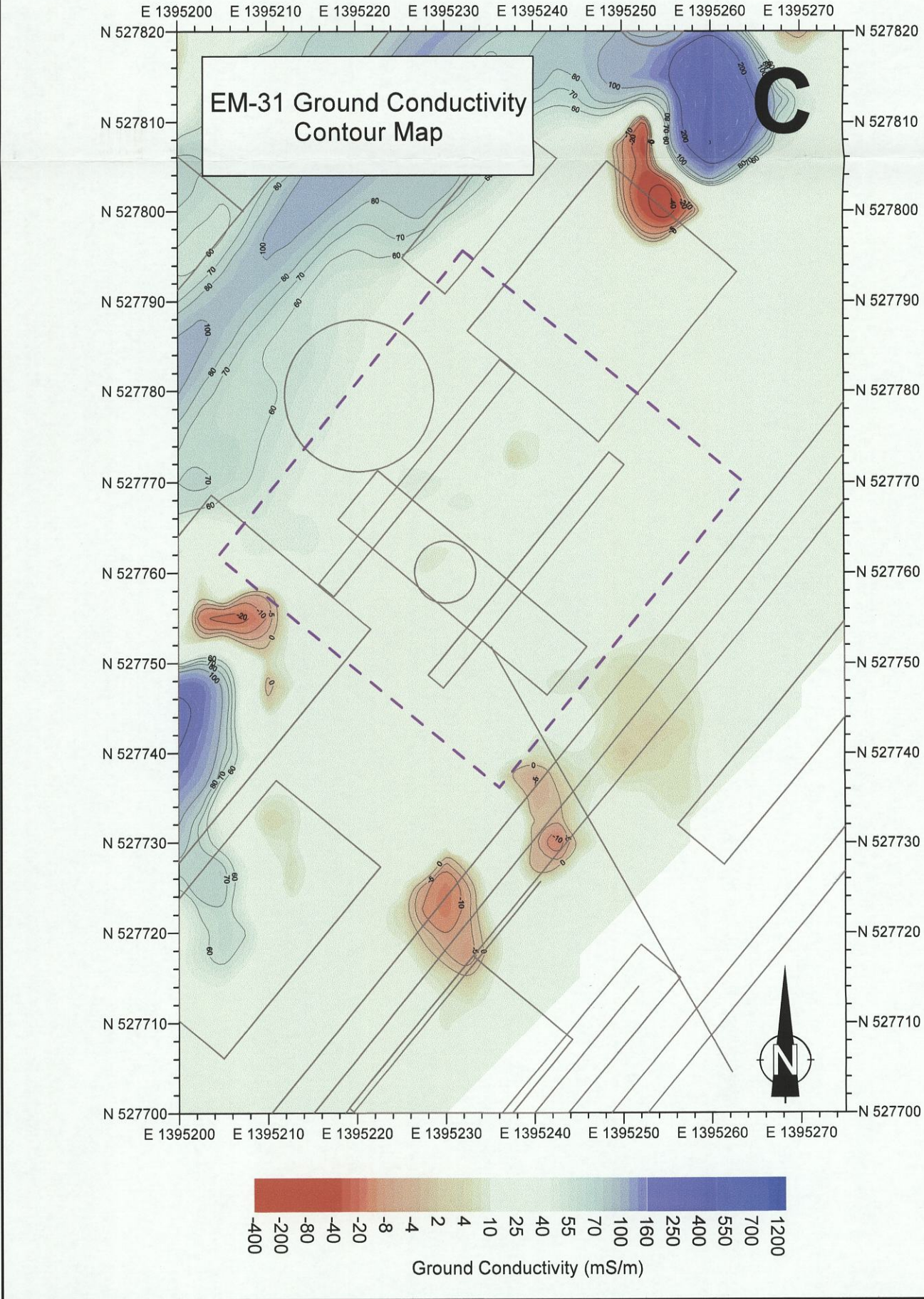
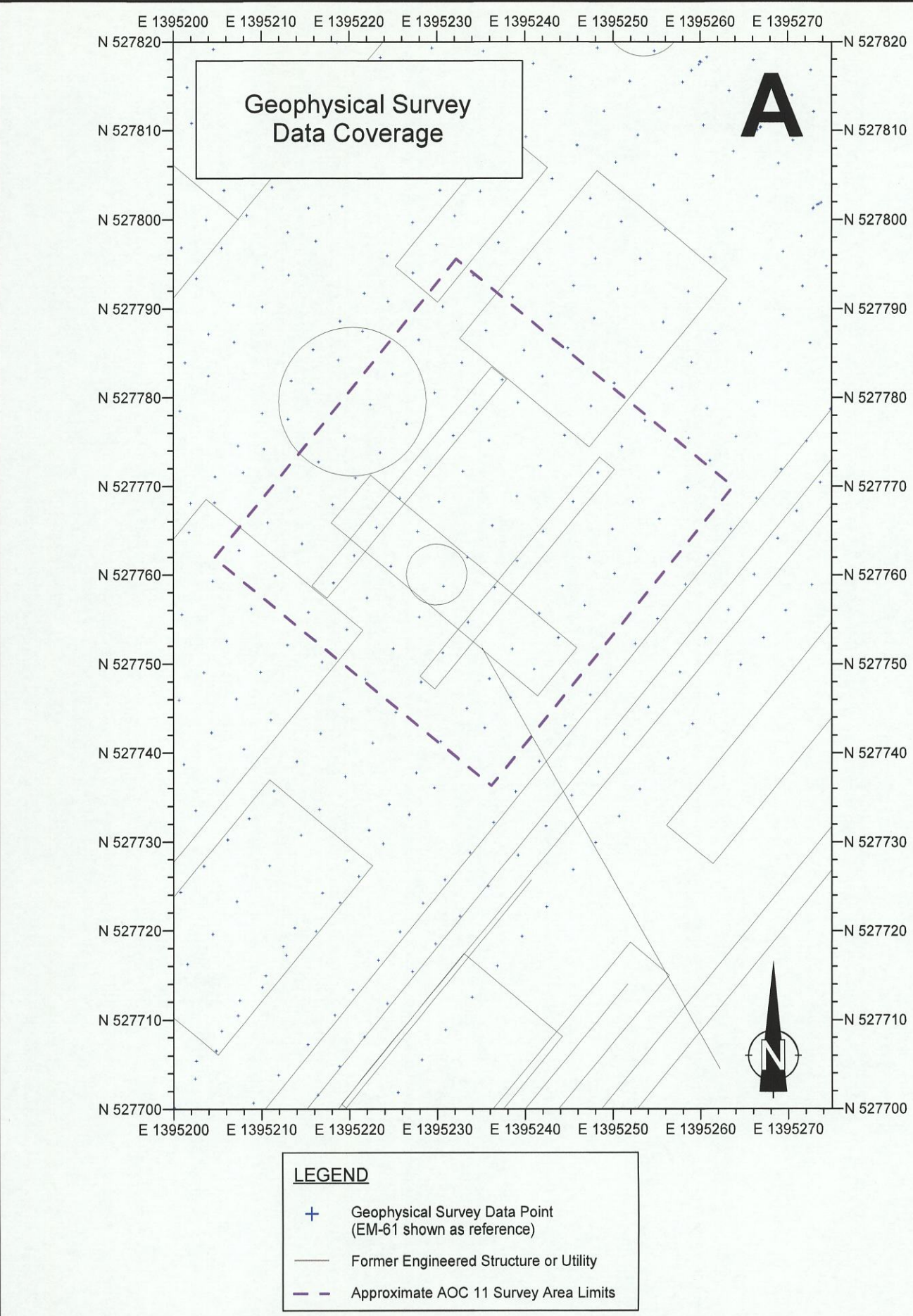


FIGURE 4.8.2-1

DRAWING NUMBER

SHEET NUMBER

1

Geophysical Survey Contour Maps
AOC-11 Former Gasoline UST
AK Steel Corporation
Former Armco Hamilton Plant
401 Augspurger Road
New Miami, Butler County, OH
August 2005

SCALE: AS SHOWN	DATE: 06/22/06	PROJECT NUMBER: 00076-069-300
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WEB: [HTTP://WWW.ENSR.AECOM.COM](http://www.ensr.aecom.com)

NOTES:

Ground conductivity and magnetic susceptibility data were collected using a Geonics, Ltd. EM-31 terrain conductivity meter. Instrument was used in vertical dipole mode.

Differential response electromagnetic data were collected using a Geonics, Ltd. EM-61 high-sensitivity metal detector with 1.0 x 0.5 meter coils.

Position control was maintained using a Trimble GeoXT Differential GPS (DGPS) in Ohio South State Plane coordinate system, NAD83 Geodetic Datum.

Data collection profile spacing was approximately 5 feet with station spacing at approximately 2.5 feet.

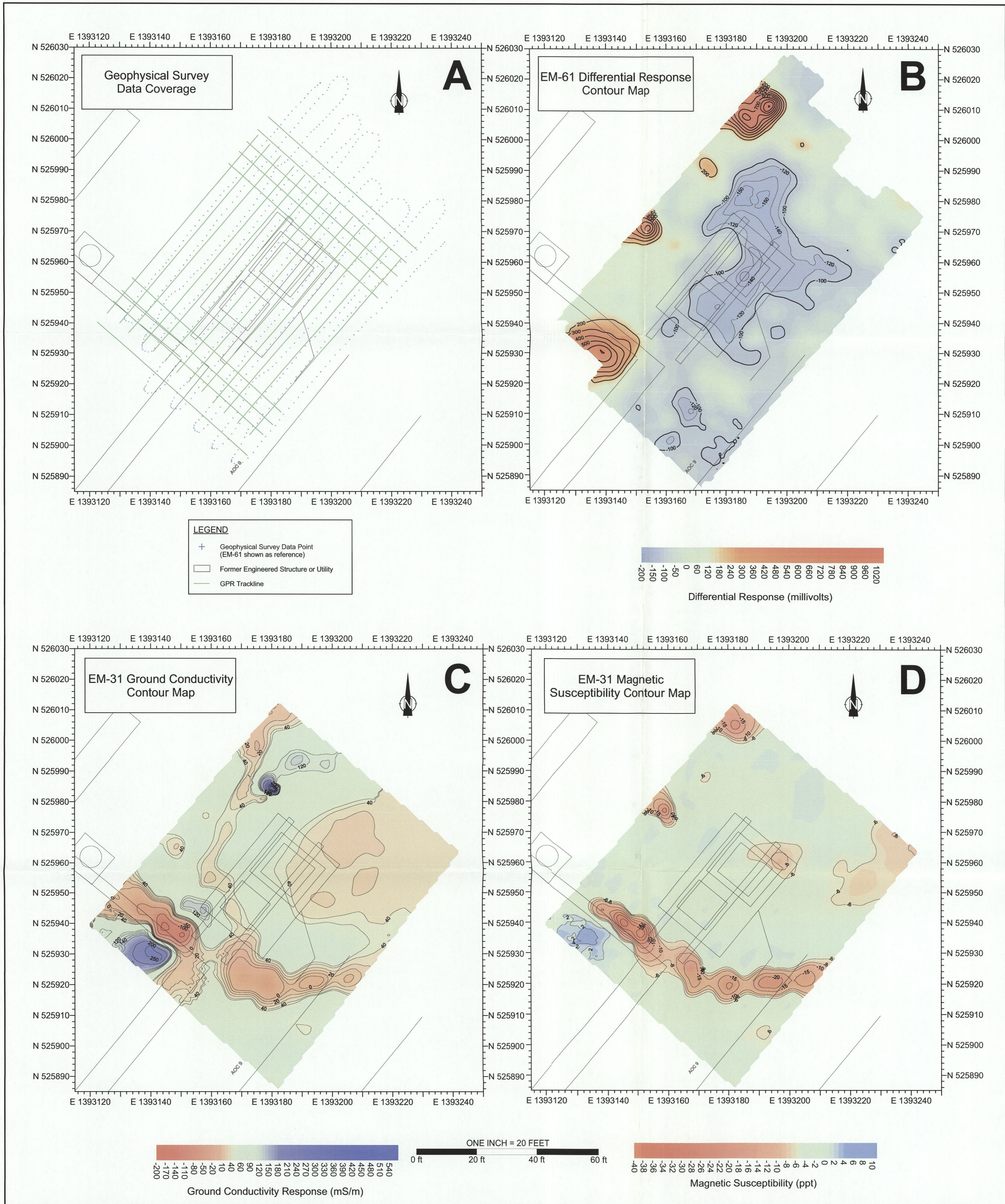


FIGURE 4.6.2-1

SHEET NUMBER

1

Geophysical Survey Contour Maps
AOC-9 Former Fuel Oil UST's
AK Steel Corporation
Former Armco Hamilton Plant
401 Augspurger Road
New Miami, Butler County, OH
August 2005

SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	05/02/06	00076-069-300

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NOTES:

Ground conductivity and magnetic susceptibility data were collected using a Geonics, Ltd. EM-31 Terrain Conductivity meter. Instrument was used in vertical dipole mode.

Differential response electromagnetic data were collected using a Geonics, Ltd. EM-61 high-sensitivity metal detector with 1.0 x 0.5 meter coils.

Position control was maintained using a Trimble GeoXT Differential GPS (DGPS) in Ohio South State Plane coordinate system, NAD83 Geodetic Datum.

Data collection profile spacing was approximately 5 feet with station spacing at approximately 2.5 feet.

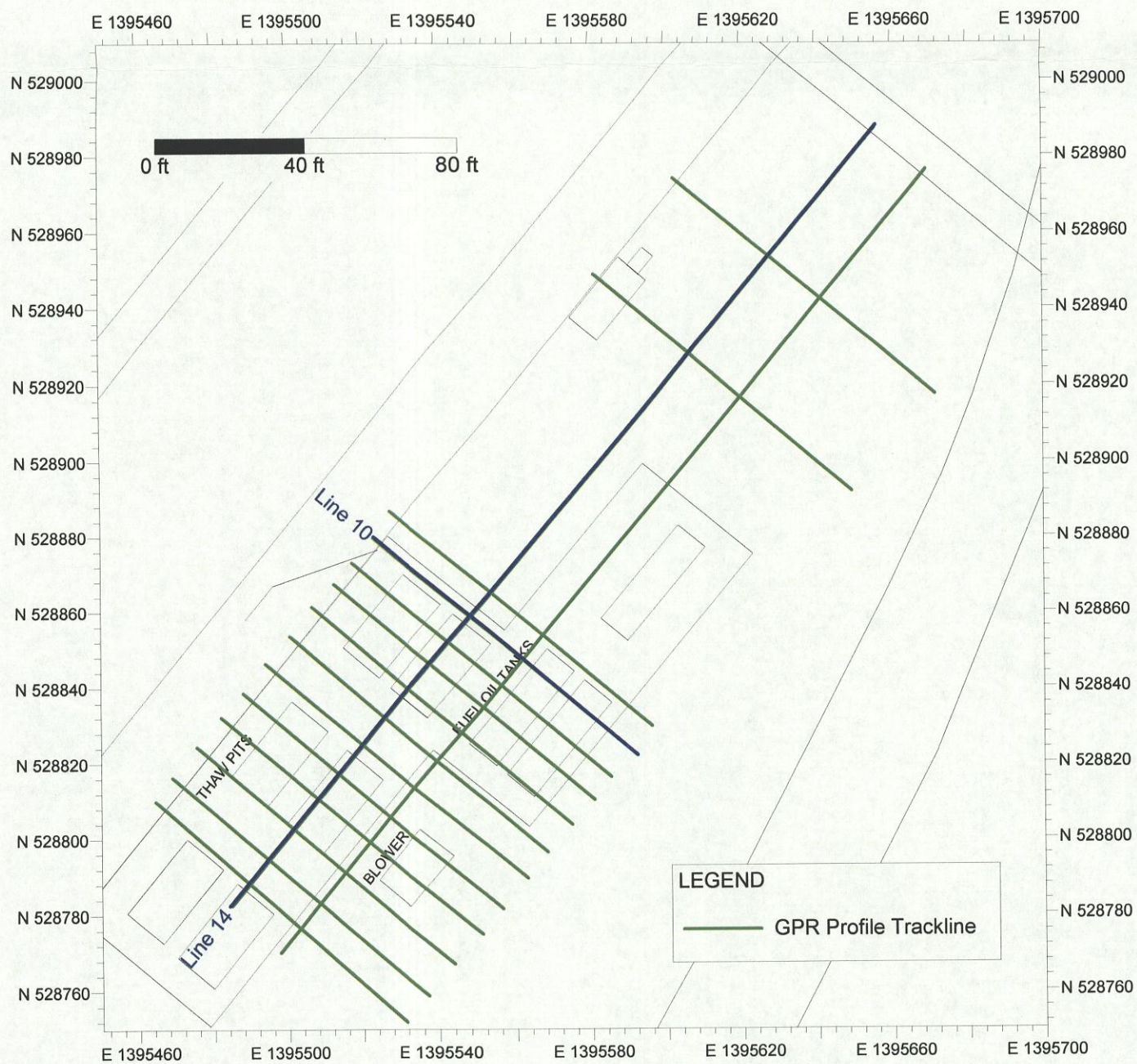
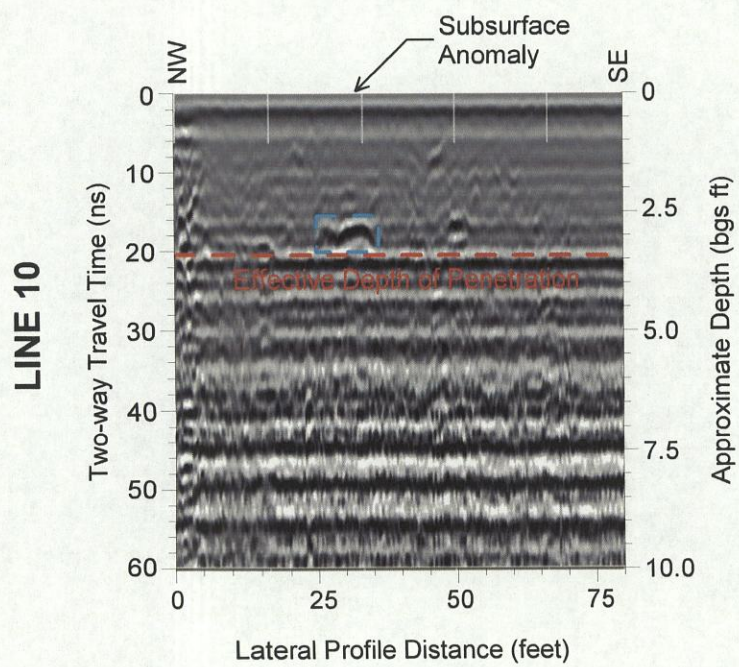
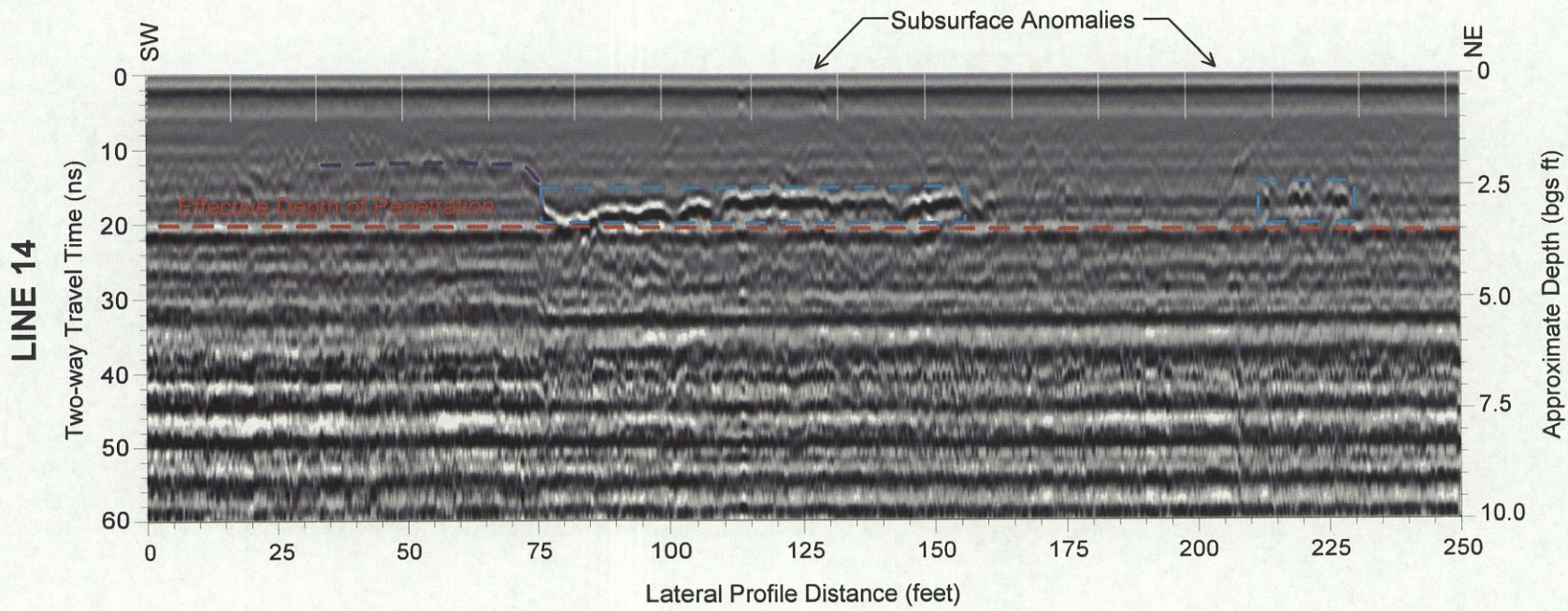


FIGURE 4.5.2-2

SHEET NUMBER:

1

DRAWING NUMBER:

GPR Profile Locations and Example Output
AOC 8 - South Parcel
AK Steel Corporation
Former Armco Hamilton Plant
401 Augspurger Road
New Miami, Butler County, OH
August 2005

SCALE:

AS SHOWN

DATE:

6/22/06

PROJECT NUMBER:

00076-069-300

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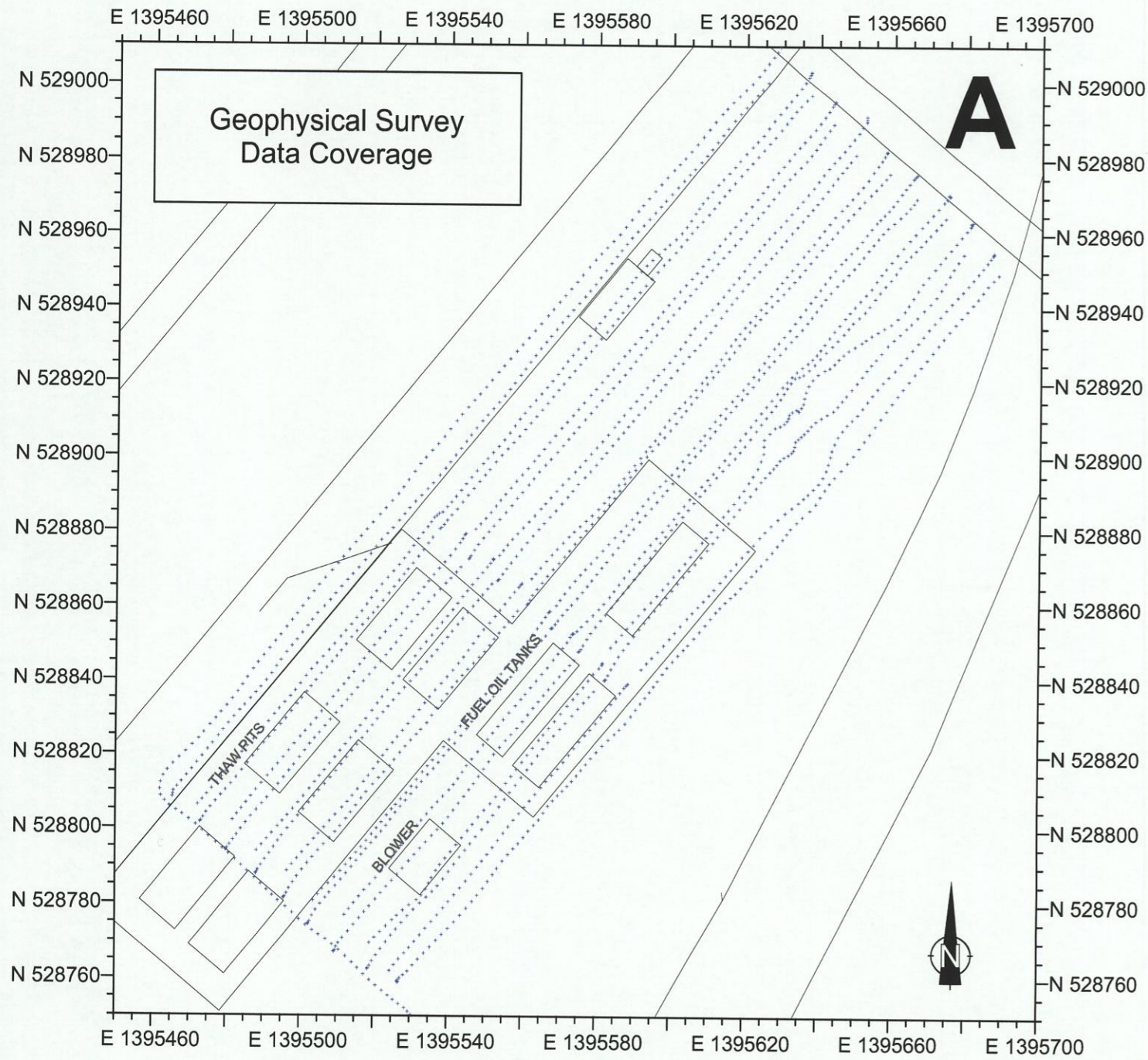
ENSR CORPORATION
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WARRENVILLE, ILLINOIS 60555
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FAX: (630) 836-1711
WEB: [HTTP://WWW.ENSR.AECOM.COM](http://www.ensr.aecom.com)

NOTES:

Ground Penetrating Radar profiles were collected using a GSSI SIR-2000 utilizing a 400 MHz antenna.

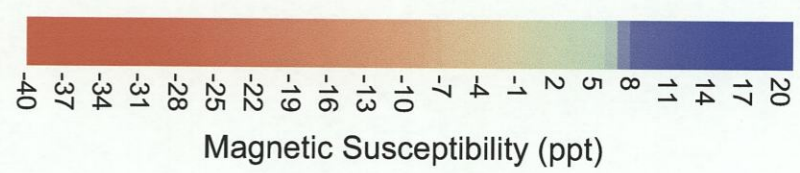
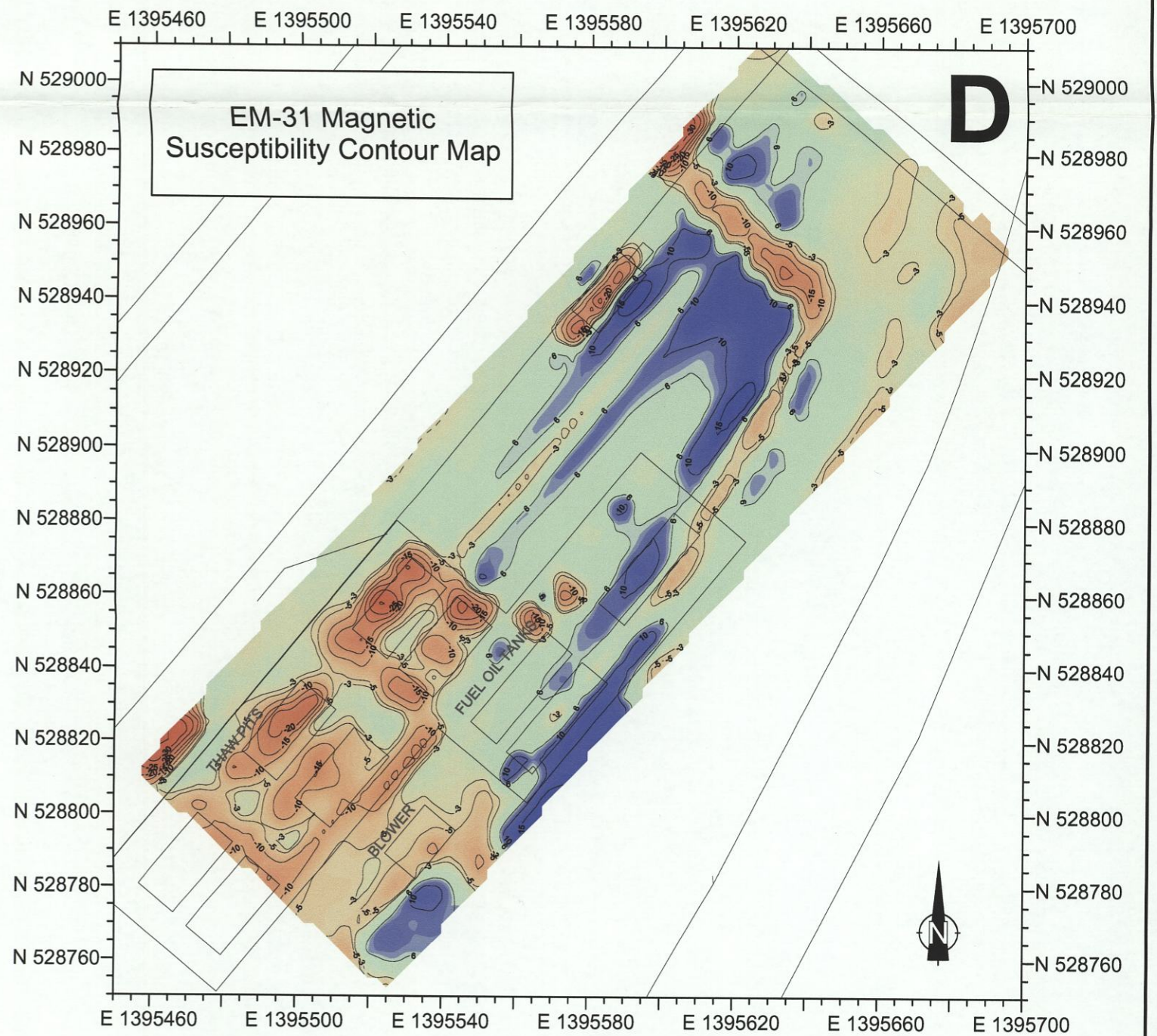
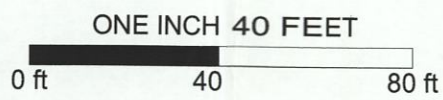
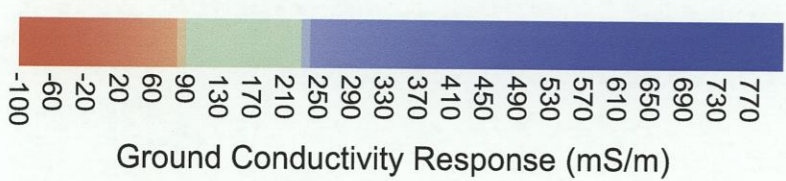
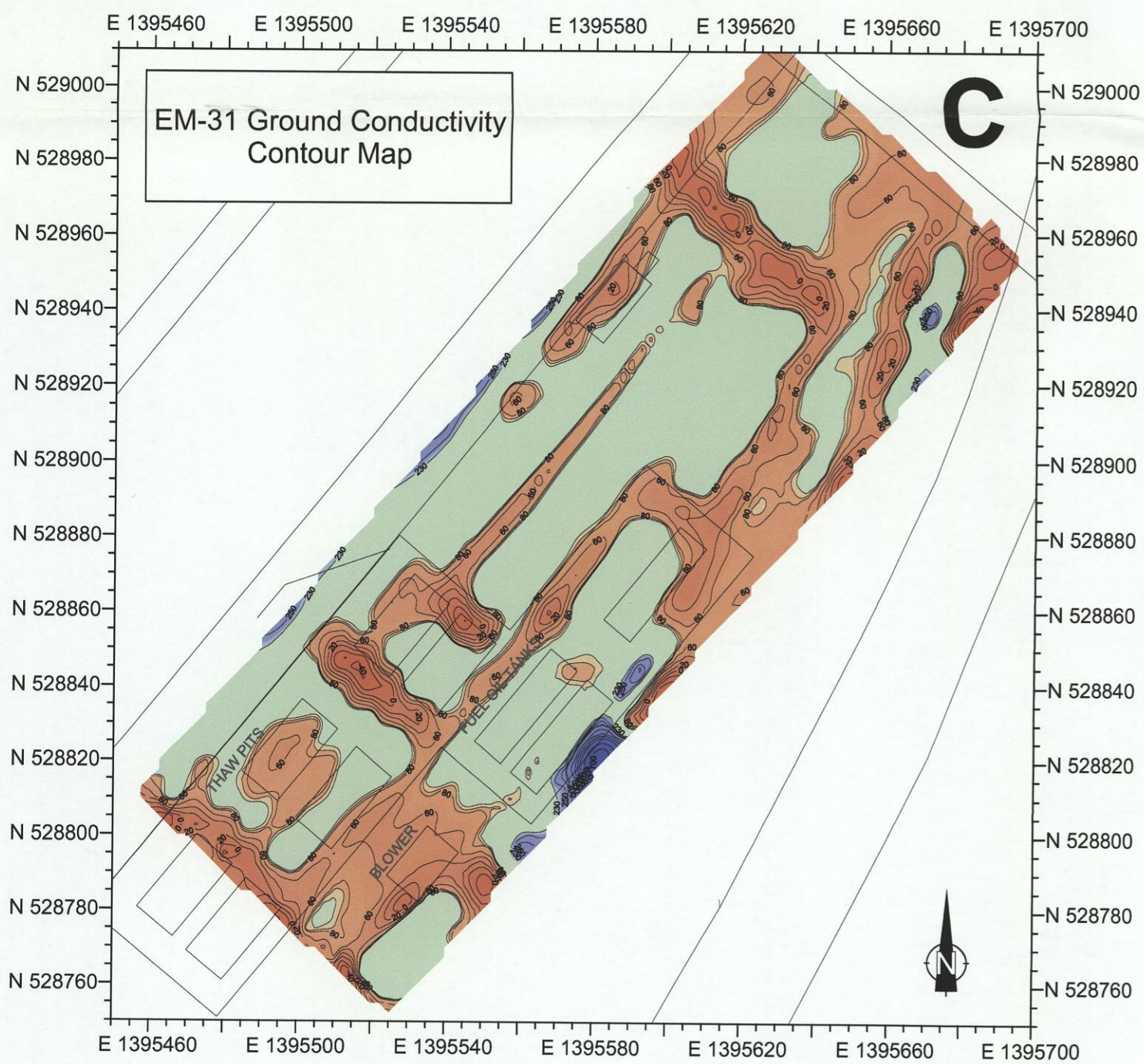
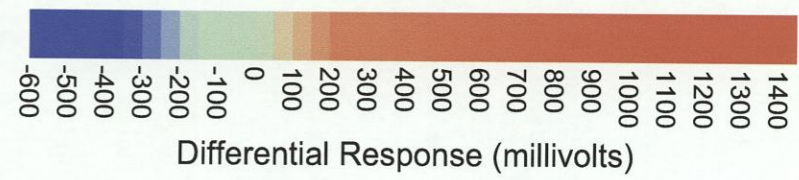
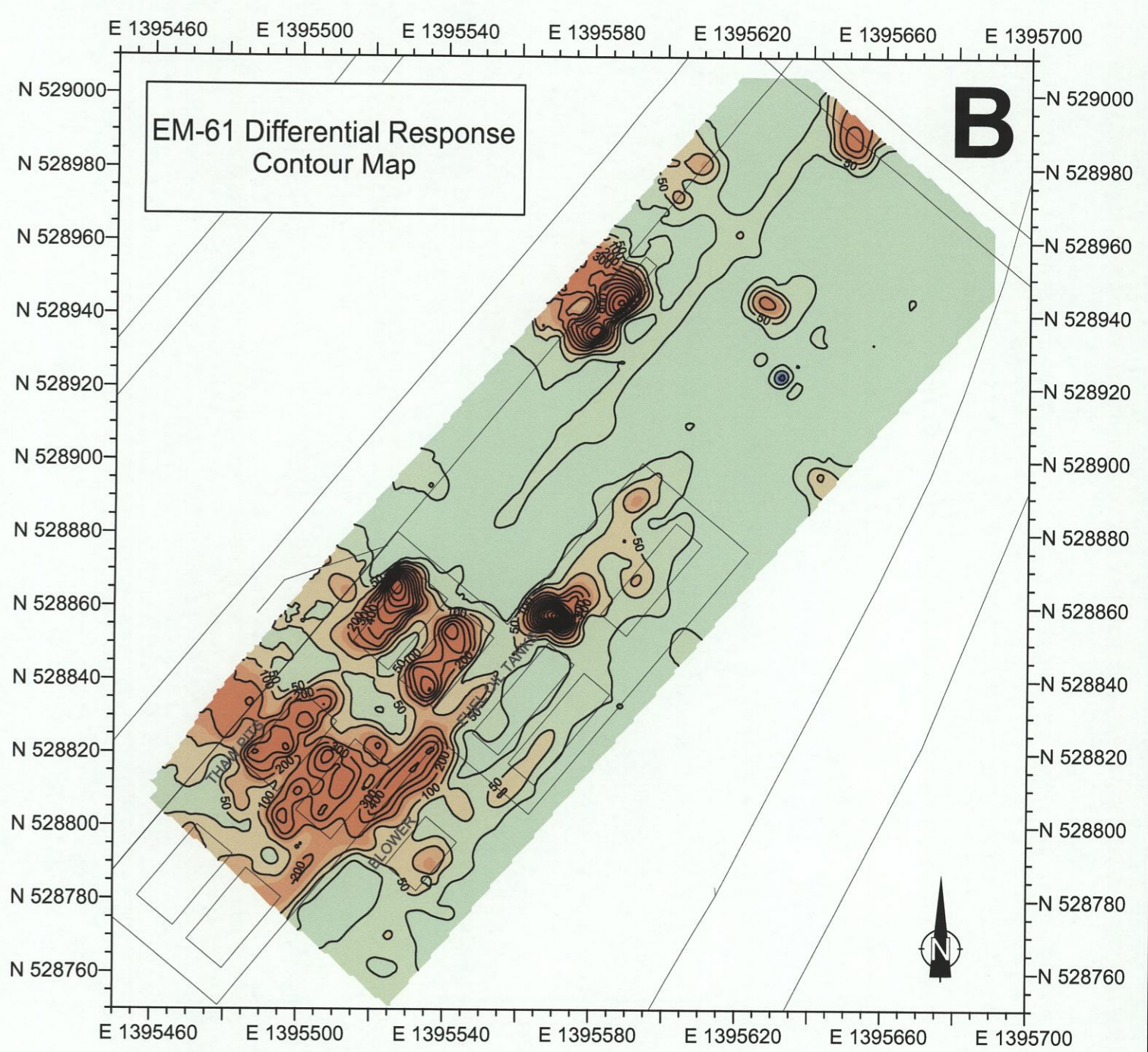
Record length was approximately 60 ns.

GPR records were processed using RADAN and RAD2BMP software packages developed by GSSI.



LEGEND

- + Geophysical Survey Data Point (EM-61 shown as reference)
- Former Engineered Structure or Utility



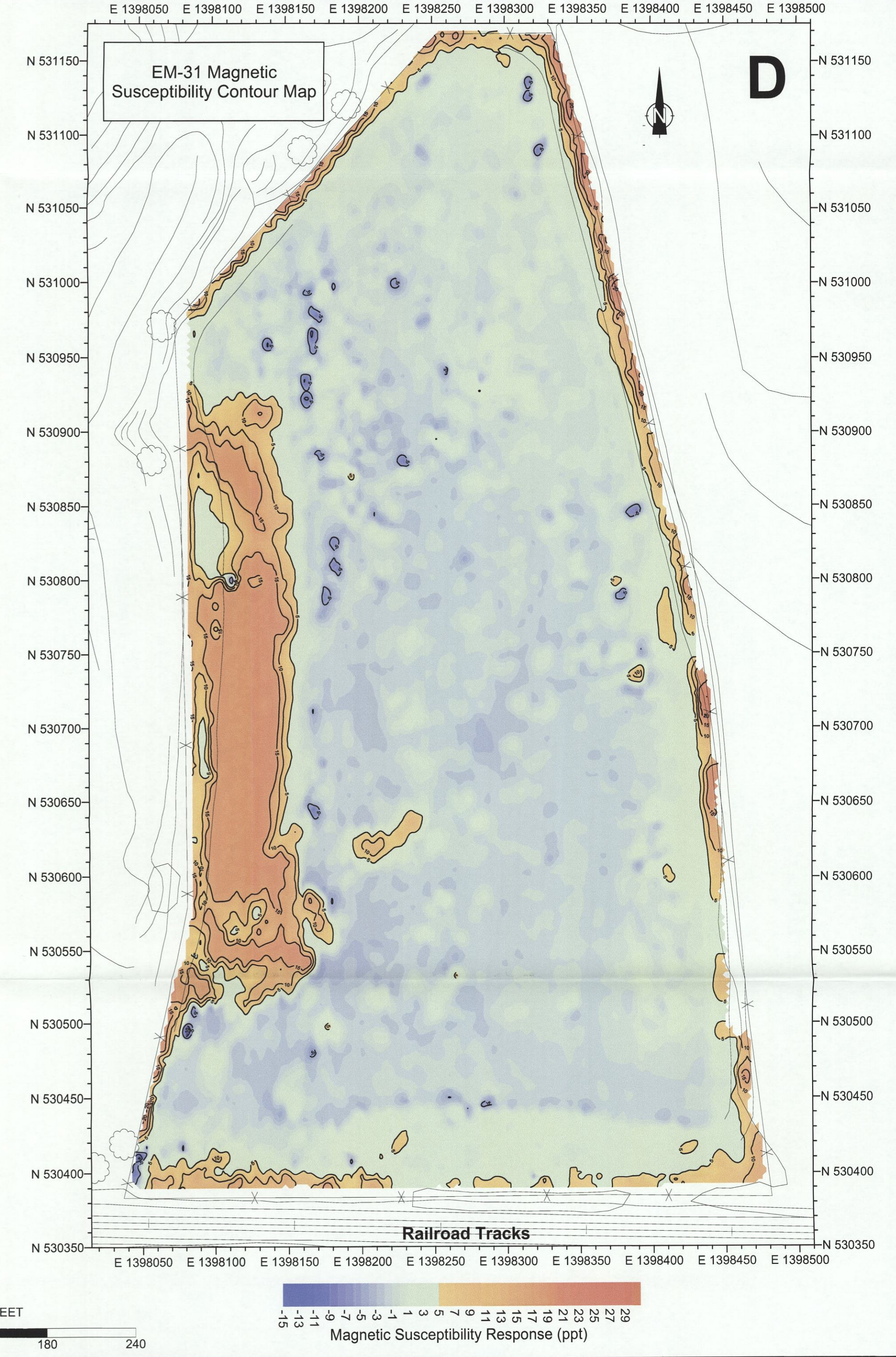
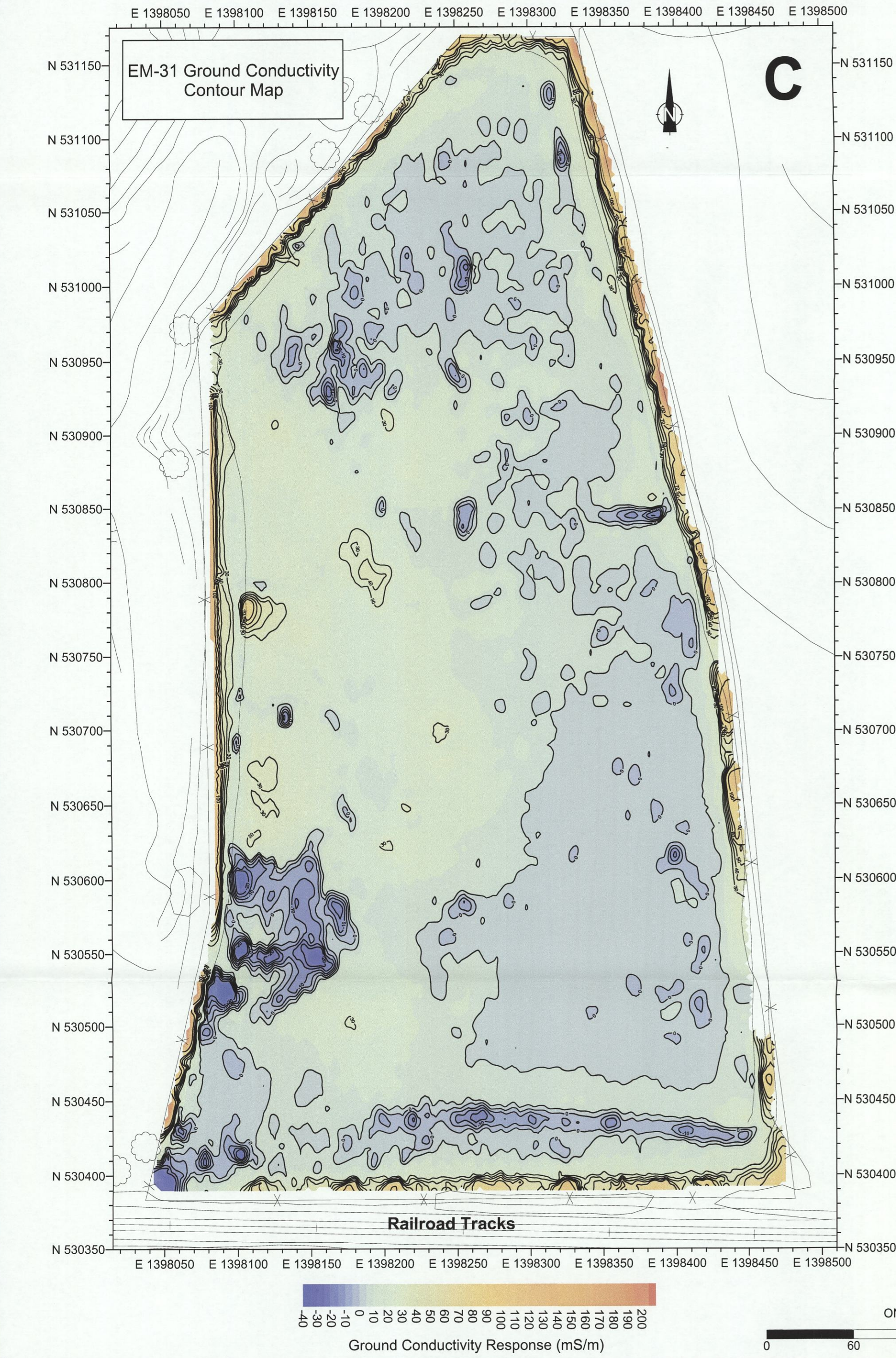
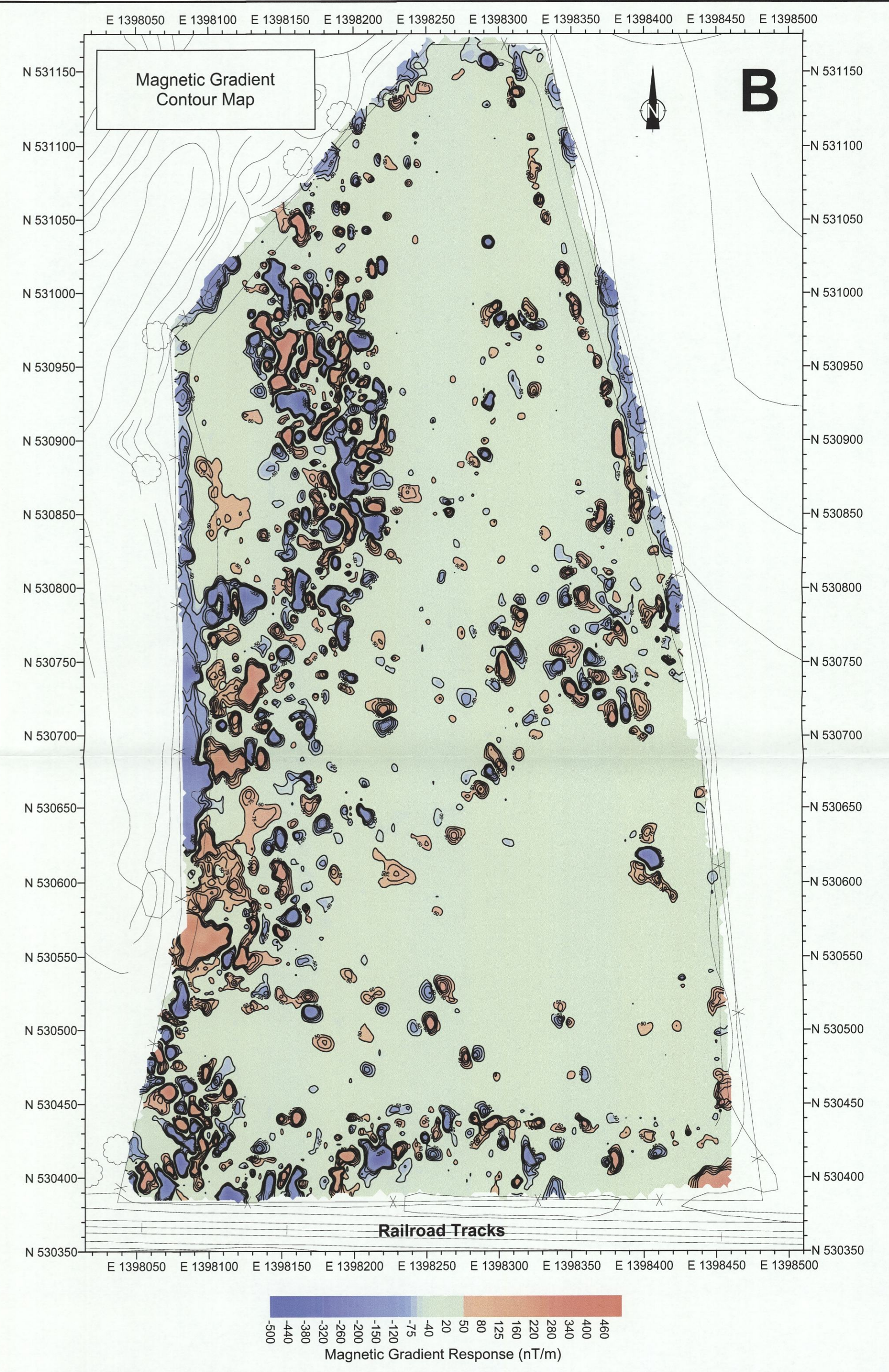
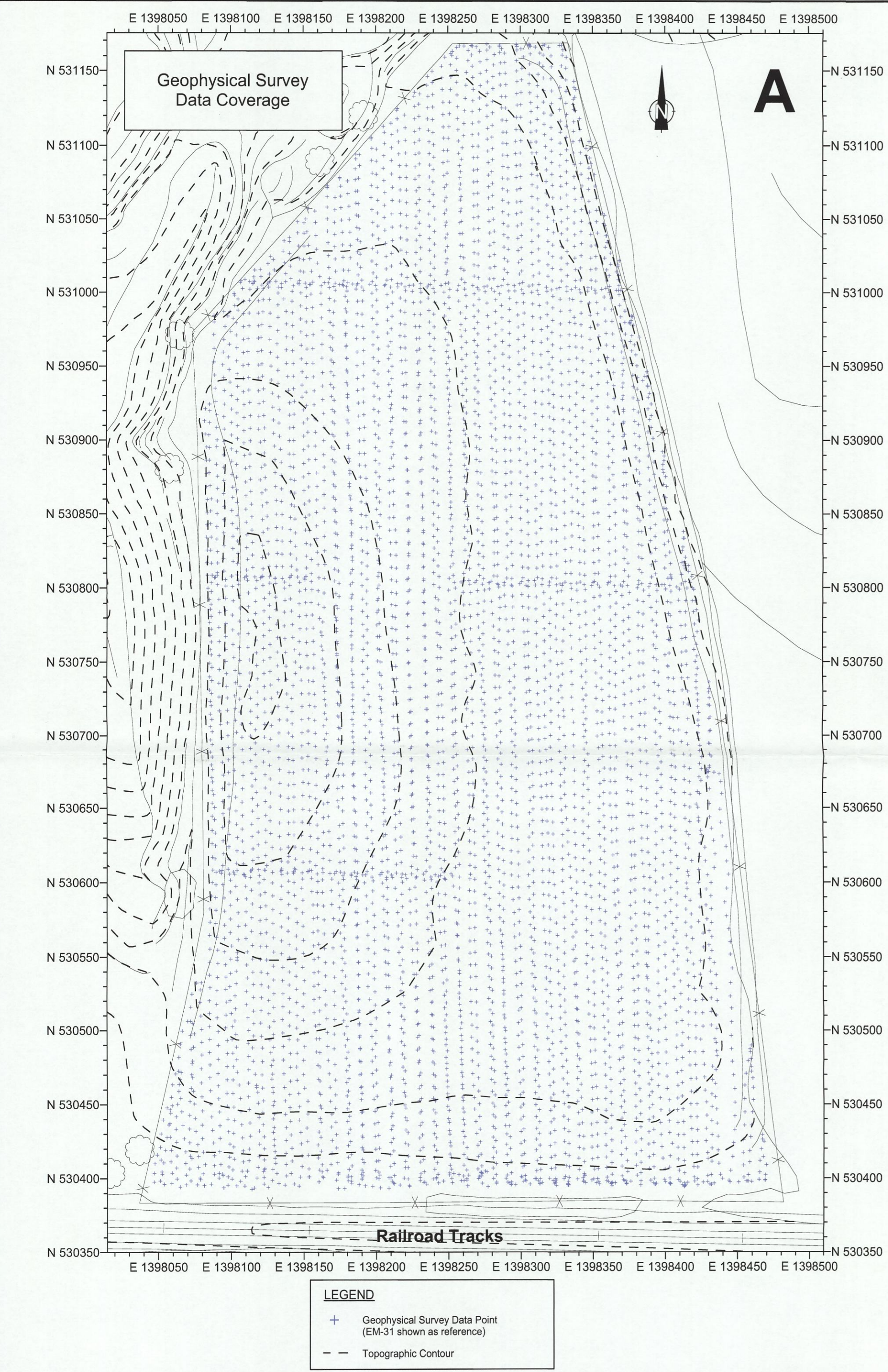


FIGURE 4.2.2-1

Geophysical Response Contour Maps AOC-2 Closed Landfill AK Steel Corporation Former Armco Hamilton Plant 401 Augspurger Road New Miami, Butler County, OH August 2005		
SCALE: AS SHOWN	DATE: 5/2/06	PROJECT NUMBER: 00076-069-300

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NOTES:

Electromagnetic data were collected using a Geonics, Ltd. EM-31 Terrain Conductivity meter.

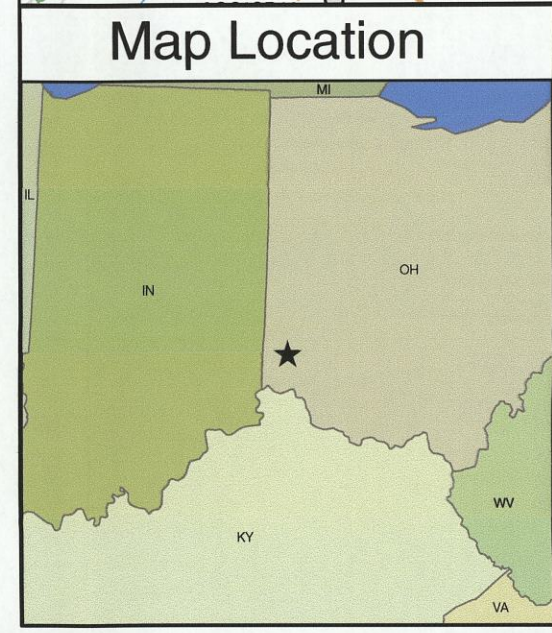
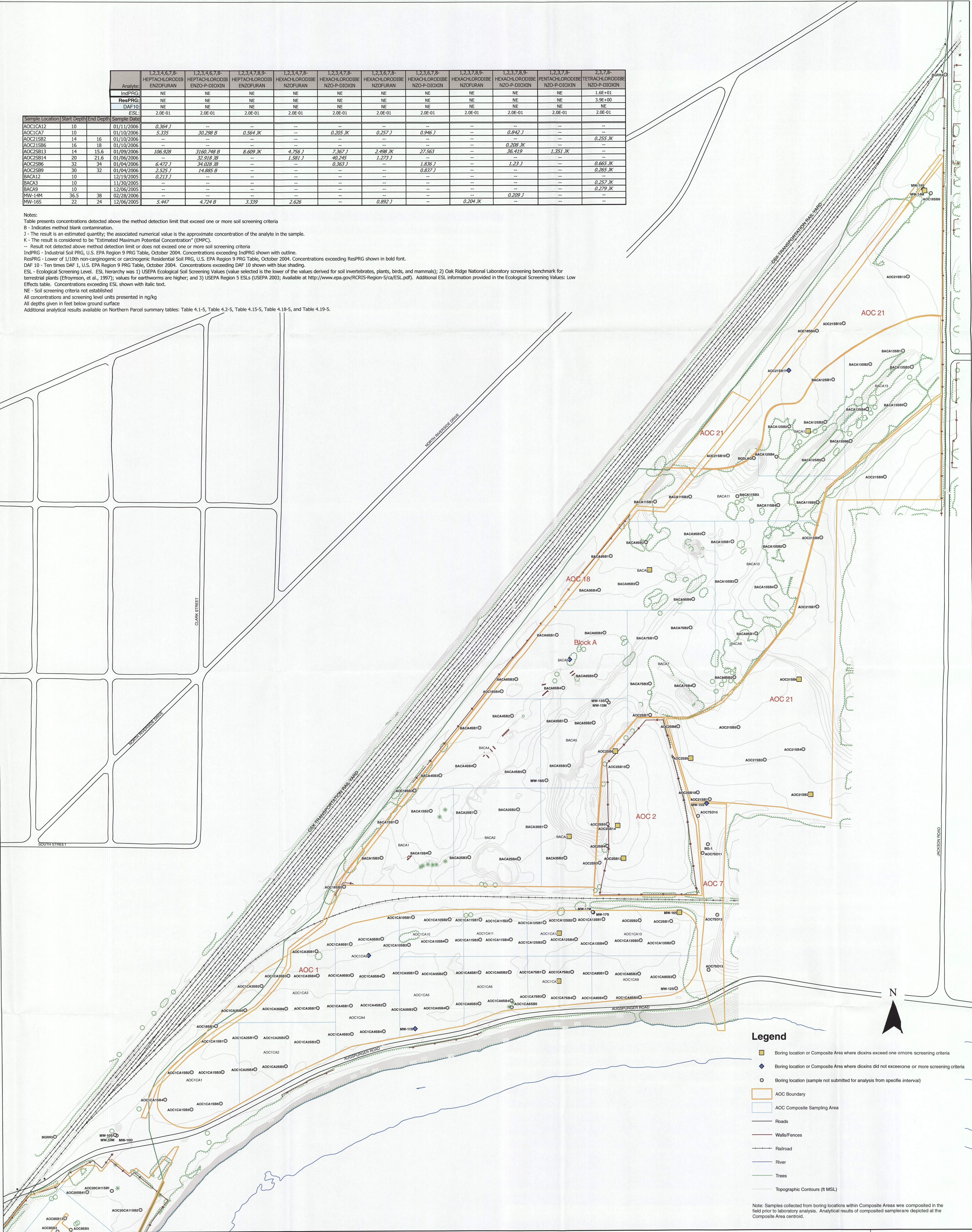
Magnetic data were collected using a Geometrics, Inc. G-858 Cesium Vapor Magnetic Gradiometer.

Northing and Easting location control was maintained using a Trimble GeoXT Differential GPS (DGPS) in Ohio South State Plane coordinate system, NAD83 Geodetic Datum.

Data collection profile spacing was approximately 5 feet with station spacing at approximately 2.5 feet.

Analyte:	1,2,3,4,6,7,8- HEPTACHLORODIB ENZOFURAN	1,2,3,4,6,7,8- HEPTACHLORODIB ENZO-P-DIOXIN	1,2,3,4,7,8,9- HEPTACHLORODIB ENZOFURAN	1,2,3,4,7,8- HEXACHLORODIBE NZOFURAN	1,2,3,4,7,8- HEXACHLORODIBE NZO-P-DIOXIN	1,2,3,6,7,8- HEXACHLORODIBE NZOFURAN	1,2,3,6,7,8- HEXACHLORODIBE NZO-P-DIOXIN	1,2,3,7,8,9- HEXACHLORODIBE NZOFURAN	1,2,3,7,8,9- HEXACHLORODIBE NZO-P-DIOXIN	1,2,3,7,8- PENTACHLORODIBE NZO-P-DIOXIN	2,3,7,8- TETRACHLORODIBE NZO-P-DIOXIN
IndPRG:	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
ResPRG:	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
DAF10:	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
ESL:	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01
Sample Location	Start Depth	End Depth	Sample Date								
AOC1CA12	10		01/11/2006	0.364 J							
AOC1CA7	10		01/10/2006	5.335	30.298 B	0.564 JK		0.209 JK	0.257 J	0.946 J	0.842 J
AOC21SB2	14	16	01/10/2006								0.255 JK
AOC21SB6	16	18	01/10/2006								
AOC2SB13	14	15.6	01/09/2006	106.928	3160.748 B	8.609 JK	4.756 J	7.367 J	2.498 JK	27.563	36.419
AOC2SB14	20	21.6	01/06/2006		32.918 JB		1.581 J	40.245	1.273 J		
AOC2SB6	32	34	01/04/2006	6.472 J	34.029 JB			0.363 J	1.836 J		1.23 J
AOC2SB9	30	32	01/04/2006	2.525 J	14.885 B				0.837 J		0.665 JK
BACA12	10		12/19/2005	0.213 J							0.265 JK
BACA3	10		11/30/2005								0.257 JK
BACA9	10		12/06/2005								0.279 JK
MW-14M	36.5	38	02/28/2006							0.209 J	
MW-16S	22	24	12/06/2005	5.447	4.724 B	3.339	2.626		0.892 J		0.204 JK

Notes:
Table presents concentrations detected above the method detection limit that exceed one or more soil screening criteria
B - Indicates method blank contamination.
J - The result is an estimated quantity; the associated numerical value is the approximate concentration of the analyte in the sample.
K - The result is considered to be "Estimated Maximum Potential Concentration" (EMPC).
- Result not detected above method detection limit or does not exceed one or more soil screening criteria
IndPRG - Industrial Soil PRG, U.S. EPA Region 9 PRG Table, October 2004. Concentrations exceeding IndPRG shown with outline.
ResPRG - Lower of 1/10th non-carcinogenic or carcinogenic Residential Soil PRG, U.S. EPA Region 9 PRG Table, October 2004. Concentrations exceeding ResPRG shown in bold font.
DAF 10 - Ten times DAF 1, U.S. EPA Region 9 PRG Table, October 2004. Concentrations exceeding DAF 10 shown with blue shading.
ESL - Ecological Screening Level. ESL hierarchy was 1) USEPA Ecological Soil Screening Values (value selected is the lower of the values derived for soil invertebrates, plants, birds, and mammals); 2) Oak Ridge National Laboratory screening benchmark for terrestrial plants (Effroyson, et al., 1997); values for earthworms are higher; and 3) USEPA Region 5 ESLs (USEPA 2003; Available at <http://www.epa.gov/RCRIS/Region-5/ca/ESL.pdf>). Additional ESL information provided in the Ecological Screening Values: Low Effects table. Concentrations exceeding ESL shown with italic text.
NE - Soil screening criteria not established
All concentrations and screening level units presented in ng/kg
All depths given in feet below ground surface
Additional analytical results available on Northern Parcel summary tables: Table 4.1-5, Table 4.2-5, Table 4.15-5, Table 4.18-5, and Table 4.19-5.



Soil Dioxin Sample Locations and Screening Level Exceedances >10 ft bgs - Northern Parcel

Scale: 1 inch equals 150 feet

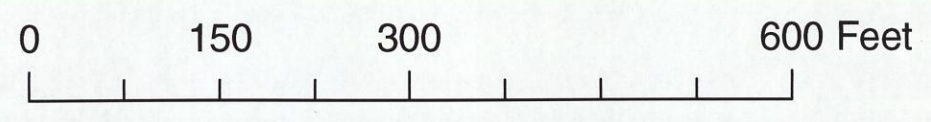
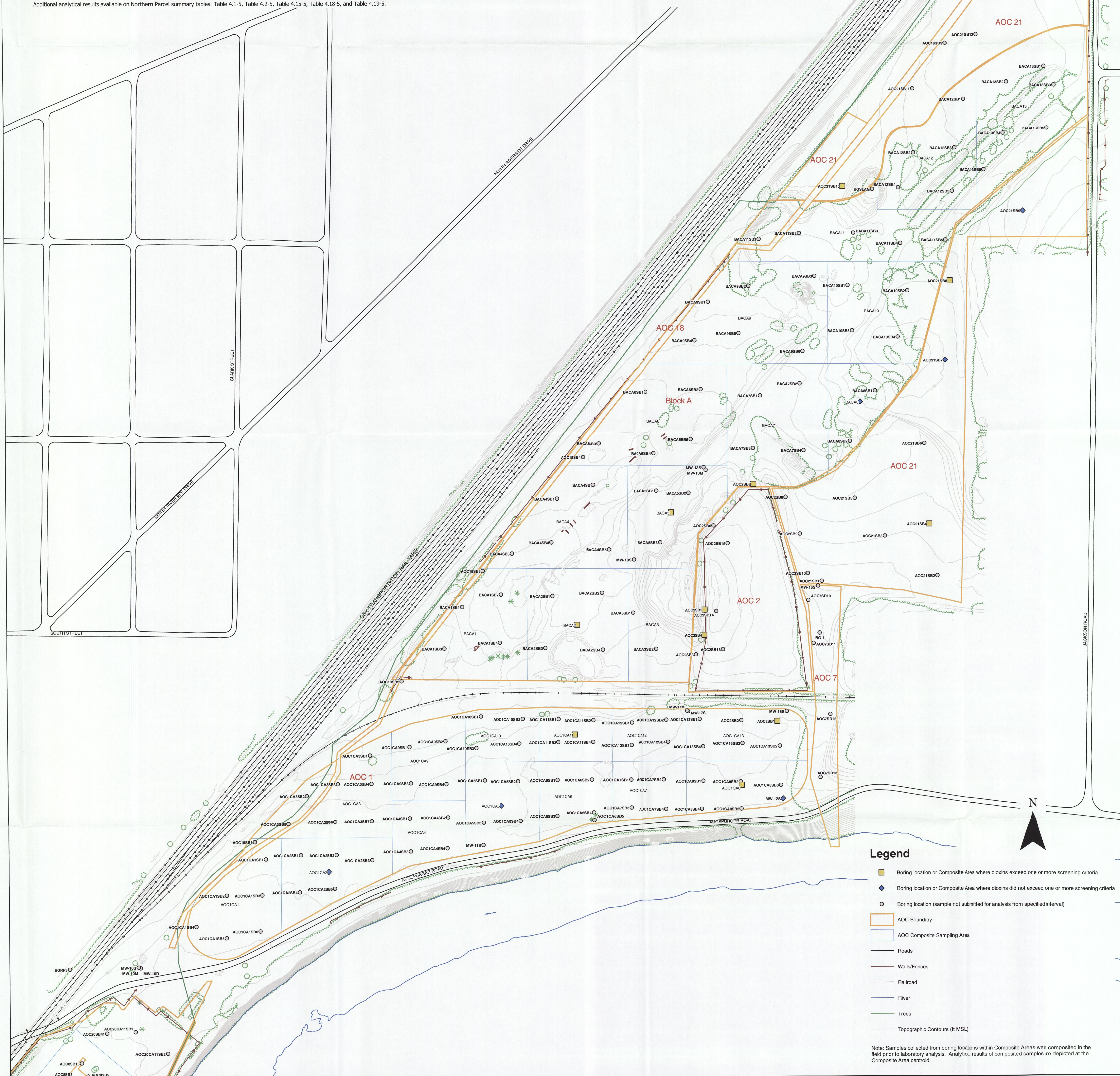


Figure 4.0.2-15

Project # MR0507
November 2008

[illegible]

Additional information on background samples available on Table 4.28-3 and Figure 4.28.0-5.

Notes:

Table presents concentrations detected above the method detection limit that exceed one or more soil screening criteria

B - Indicates method blank contamination

J - The result is an estimated quantity; the associated numerical value is the approximate concentration of the analyte in the sample

K - The result is considered to be "Estimated Maximum Potential Concentration" (EMPC).

Result not detected above method detection limit or does not exceed one or more soil screening criteria

INDPRG - Industrial Soil PRG, U.S. EPA Region 9 PRG Table, October 2004. Concentrations exceeding INDPRG shown with outline.

ResPRG - Lower of 1/10th non-carcinogenic or carcinogenic Residential Soil PRG, U.S. EPA Region 9 PRG Table, October 2004. Concentrations exceeding ResPRG shown in bold font.

DAF 10 - Ten Times DAF, U.S. EPA Region 9 PRG Table, October 2004. Concentrations exceeding DAF 10 shown with blue shading.

ESL - Ecological Screening Levels. ESL hierarchy was 1) USEPA Ecological Soil Screening Values (value selected is the lower of the values derived for soil invertebrates, plants, birds, and mammals); 2) Oak Ridge National Laboratory screening benchmark for terrestrial plants (Ermeysson, et al., 1997); values for earthworms are higher; and 3) USEPA Region 9 ESLs (USEPA/Region 9/5a/ESL.pdf). Additional ESL information provided in the Ecological Screening Values: Low Effects table. Concentrations exceeding ESL shown with italic text.

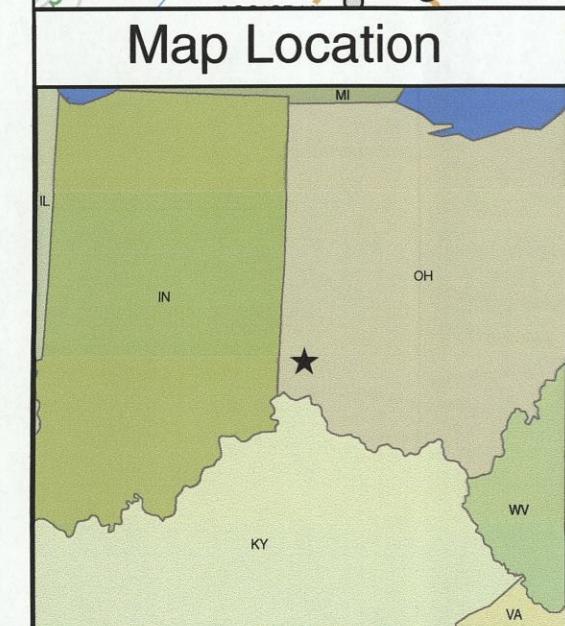
NE - Soil screening criteria not established

Dioxin TEQ-HH is the sum of the individual dioxin congeners using the respective TEFs.

All concentrations and screening level units presented in ng/kg

All depths given in feet below ground surface

Additional analytical results available on Northern Parcel summary tables: Table 4.1-5, Table 4.2-5, Table 4.15-5, Table 4.18-5, and Table 4.19-5.



AK Steel

Kemron
ENVIRONMENTAL SERVICES

Project # MR0507
November 2008

0 150 300 600 Feet